

**HEAT PUMP WATER HEATING SYSTEM  
INCLUDING A COMPRESSOR  
HAVING A VARIABLE CLEARANCE VOLUME**

**ABSTRACT OF THE DISCLOSURE**

A heat pump water heater system includes a compressor that has a variable clearance volume that can be selectively controlled to control the mass flow rate of refrigerant from the compressor. Under higher ambient air temperature conditions, the variable volume is increased to keep refrigerant in a variable clearance volume chamber and to decrease the mass flow rate of the refrigerant from the compressor. Under lower ambient air temperature conditions the variable volume is decreased to increase the mass flow rate. The variable clearance volume allows for maintaining optimum system performance under a variety of ambient air temperature conditions.

N:\Clients\CARRIER\IP00260\PATENT\60246-260 - application.doc